

# PATENT COOPERATION TREATY

From the Japan Patent Office

(INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY)

## PCT

To: Agent of Applicant  
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### WRITTEN OPINION OF THE INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

(PCT Rule 66)

Date of mailing (day/month/year) <span style="float: right;">15.2.2005</span>		
Applicant's or agent's file reference <span style="float: right;">09604</span>	<b>REPLY DUE</b> within 2 months from the above date of mailing	
International application No. PCT/JP2004/000401	International filing date (day/month/year) 20.01.2004	Priority date (day/month/year) 21.01.2003
International Patent Classification (IPC) <span style="float: right;">Int. Cl<sup>7</sup> B01J31/22, C07C41/06, 43/15, C07B61/00</span>		
Applicant <div style="text-align: center;">KURARAY CO., LTD.</div>		
<p>1. <input checked="" type="checkbox"/> The written opinion drawn up by the International Searching Authority is regarded a written opinion of the International Preliminary Examining Authority. <input checked="" type="checkbox"/> yes <input type="checkbox"/> no</p> <p>2. This <u>second</u> report contains indications relating to the following items:</p> <div style="margin-left: 20px;"> <input checked="" type="checkbox"/> Box No. I Basis of the opinion  <input type="checkbox"/> Box No. II Priority  <input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability  <input type="checkbox"/> Box No. IV Lack of unity of invention  <input checked="" type="checkbox"/> Box No. V Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement  <input type="checkbox"/> Box No. VI Certain documents cited  <input type="checkbox"/> Box No. VII Certain defects in the international application  <input checked="" type="checkbox"/> Box No. VIII Certain observations on the international application                 </div> <p>3. The applicant is hereby invited to reply to this opinion.</p> <p><b>When?</b> See the time limit indicated above. The applicant may, before the expiration of that time limit, request this Authority to grant an extension, see Rule 66.2(d). An extension is granted only when a rational reason exists and schedule is not full.</p> <p><b>How?</b> By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.</p> <p><b>Also</b> For an additional opportunity to submit amendments, see Rule 66.4. For the examiner's obligation to consider amendments and/or argument, see Rule 66.4bis. For an informal communication with the examiner, see Rule 66.6.</p> <p><b>If no reply is filed</b>, the international preliminary examination report will be established on the basis of this opinion.</p> <p>4. The final date by which the international preliminary examination report must be established according to Rule 69.2 is: <u>08.05.2005</u>.</p>		

Name and mailing address Japan Patent Office (IPEA/JP) 4-3, Kasumigaseki 3-chome Chiyoda-ku, Tokyo 100-8915 Japan	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">Authorized officer Examiner</td> <td style="width: 20%; text-align: center;">4G</td> <td style="width: 20%; text-align: center;">9439</td> </tr> <tr> <td colspan="3" style="text-align: center;">Misako ANZAI</td> </tr> <tr> <td colspan="3">Telephone No. 03-3581-1101 extension 3416</td> </tr> </table>	Authorized officer Examiner	4G	9439	Misako ANZAI			Telephone No. 03-3581-1101 extension 3416		
Authorized officer Examiner	4G	9439								
Misako ANZAI										
Telephone No. 03-3581-1101 extension 3416										

WRITTEN OPINION OF THE INTERNATIONAL  
PRELIMINARY EXAMINING AUTHORITY

Intern. application No. PCT/JP2004/000401

I. Basis of the opinion

1. Unless otherwise indicated under this item, this written opinion was drawn up based on the language in which the international application was filed.  
☐ This written opinion is in the following language \_\_\_\_\_ which is:  
☐ the language of a translation furnished for the purposes of the international search (under Rule 12.3 and 23.1(b)).  
☐ the language of publication of the international application (under Rule 12.4).  
☐ the language of a translation furnished for the purposes of the international preliminary examination (under Rule 55.2 and/or 55.3).
2. This opinion has been drawn up on the basis of (Substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed".):  
☐ the international application as originally filed.  
☒ the description: pages 1-22, as originally filed  
pages \_\_\_\_\_, received by the International Preliminary Examining Authority on \_\_\_\_\_  
pages \_\_\_\_\_, received by the International Preliminary Examining Authority on \_\_\_\_\_  
☒ the claims: Nos. 2-22, as originally filed  
Nos. \_\_\_\_\_, as amended under Article 19 PCT  
Nos. 1, received by the International Preliminary Examining Authority on 21, 06, 2004  
Nos. \_\_\_\_\_, received by the International Preliminary Examining Authority on \_\_\_\_\_  
☐ the drawings: pages/Figs. \_\_\_\_\_, as originally filed  
pages/Figs. \_\_\_\_\_, received by the International Preliminary Examining Authority on \_\_\_\_\_  
pages/Figs. \_\_\_\_\_, received by the International Preliminary Examining Authority on \_\_\_\_\_  
☐ the sequence listing or related table  
see supplementary column relating to sequence listing,
3. ☐ The amendments have resulted in the cancellation of:  
☐ the description, page \_\_\_\_\_  
☐ the claims, Nos. \_\_\_\_\_  
☐ the drawings, sheets/fig \_\_\_\_\_  
☐ the sequence listing (specify) \_\_\_\_\_  
☐ the table relating to sequence listing (specify) \_\_\_\_\_
4. ☐ This opinion has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):  
☐ the description, page \_\_\_\_\_  
☐ the claims, Nos. \_\_\_\_\_  
☐ the drawings, sheets/fig \_\_\_\_\_  
☐ the sequence listing (specify) \_\_\_\_\_  
☐ the table relating to sequence listing (specify) \_\_\_\_\_

**WRITTEN OPINION OF THE INTERNATIONAL  
PRELIMINARY EXAMINING AUTHORITY**

International application No.  
PCT/JP2004/000401

**V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Claims	<u>1-22</u>	YES
	Claims		NO
Inventive Step (IS)	Claims	<u>1-22</u>	YES
	Claims		NO
Industrial Applicability (IA)	Claims	<u>1-22</u>	YES
	Claims		NO

**2. Citations and Explanations**

Reference 1: US 5886211 A  
(SAGAMI CHEMICAL RESEARCH CENTER) 1999.03.23  
Reference 2: JP 48-43327 B1  
(Esso research and engineering company) 1973.12.18

Claims 1-22 have novelty and an inventive step.

Reference 1 describes a composition containing a palladium compound, a supporting ligand and a base, and as the supporting ligand, isocyanides such as t-butyl isocyanide and the like are recited (column VI, line 14 - column VII, line 55). However, Reference 1 does not disclose or suggest use of the above-mentioned composition as a "catalyst composition for a telomerization reaction of a conjugated diene compound and alcohols".

Reference 2 describes production of unsaturated aliphatic alcohol and ether by a liquid phase reaction in the presence of a zero (0) valent palladium catalyst system of an aliphatic conjugated diolefin and water, aliphatic alcohol or a mixture thereof (column I, lines 25-32), and further describes that activating agent compounds used in association with a supply source of the 0 valent palladium are phosphine and isonitrile substance, the aforementioned isonitrile substance includes t-butylisonitrile, cyclohexylisonitrile and the like, and the property of a catalyst system can be markedly improved by the use of an organic or inorganic base material in association with a 0 valent palladium-activating agent system (column IV, line 39 - column VI, line 13). In addition, in Example 9 of Reference 2, one having a catalyst system consisting of tetrakis(triphenylphosphine)palladium and cyclohexylisonitrile at a molar ratio of 1:1 is described. However, Reference 2 does not suggest combined use of an isocyanide represented by the formula (I) of claim 1 with a palladium compound and a base represented by the formula (II), as a catalyst for a telomerization reaction of a conjugated diene compound and alcohols.

**WRITTEN OPINION OF THE INTERNATIONAL  
PRELIMINARY EXAMINING AUTHORITY**

International application No.  
PCT/JP2004/000401

Furthermore, other references described in the International Search Report do not disclose or suggest use of the composition of claim 1 as a "catalyst composition for a telomerization reaction of a conjugated diene compound and alcohols".

However, a part included in the present invention poses a problem as to the support of the specification (for the effect as a catalyst), as described in column VIII.

**VIII Certain observations on the international application**

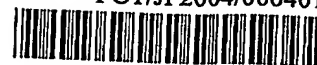
The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

1. Since the invention of claim 1 does not specify the palladium compound, it includes the use of a palladium compound containing phosphorus as in Comparative Example 3. From the description of Comparative Example 3 and page 4, lines 16-24, however, it cannot be said that the effect as a catalyst for the telomerization reaction of a conjugated diene compound and alcohols is sufficiently supported when a palladium compound containing phosphorus is used. The same applies to claims 2-22 citing claim 1.
2. Since the invention described in claim 1 does not specify the composition ratio of isocyanides relative to the palladium compound, it includes Comparative Example 4. From the description of Comparative Example 4, however, it cannot be said that the effect as a catalyst for the telomerization reaction of a conjugated diene compound and alcohols is sufficiently supported at such composition ratio. The same applies to claims 2, 3, 6-16 and 19-22 citing claim 1.

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Translation

PATENT COOPERATION TREATY

PCT/JP2004/000401



PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 09604	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/JP2004/000401	International filing date (day/month/year) 20 January 2004 (20.01.2004)	Priority date (day/month/year) 21 January 2003 (21.01.2003)
International Patent Classification (IPC) or national classification and IPC B01J 31/22, C07C 41/06, 43/15, C07B 61/00		
Applicant KURARAY CO., LTD.		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 4 sheets, including this cover sheet.

3. This report is also accompanied by ANNEXES, comprising:

a. ☒ (sent to the applicant and to the International Bureau) a total of 2 sheets, as follows:

☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).

☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.

b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) \_\_\_\_\_, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

- ☒ Box No. I Basis of the report
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

Date of submission of the demand 21 June 2004 (21.06.2004)	Date of completion of this report 12 May 2005 (12.05.2005)
Name and mailing address of the IPEA/JP	Authorized officer
Facsimile No.	Telephone No.

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP2004/000401

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language \_\_\_\_\_, which is language of a translation furnished for the purpose of:
- ☐ international search (under Rules 12.3 and 23.1(b))
- ☐ publication of the international application (under Rule 12.4)
- ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:
- ☐ The international application as originally filed/furnished
- ☒ the description:
- pages \_\_\_\_\_ 1-24 \_\_\_\_\_, as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the claims:
- pages \_\_\_\_\_ 2-22 \_\_\_\_\_, as originally filed/furnished
- pages\* \_\_\_\_\_, as amended (together with any statement) under Article 19
- pages\* 1 \_\_\_\_\_ received by this Authority on 21 June 2004 (21.06.2004)
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ the drawings:
- pages \_\_\_\_\_, as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP04/000401

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

Novelty (N)

Claims

1-22

YES

Claims

NO

Inventive step (IS)

Claims

1-22

YES

Claims

NO

Industrial applicability (IA)

Claims

1-22

YES

Claims

NO

## 2. Citations and explanations (Rule 70.7)

Document 1: US, 5886211, A (Sagami Chemical Research Center), 23 March, 1999 (23.03.99)

Document 2: JP, 48-43327, B1 (Esso Research and Engineering Co.), 18 December, 1973 (18.12.73)

The subject matters of claims 1-22 appear to be novel and to involve an inventive step.

Document 1 describes composition containing a palladium compound, a support ligand and a base, referring to isocyanides such as t-butyliisocyanide as the said support ligand (column 6, line 14 to column 7, line 55). Document 1, however, does not describe or suggest that the said composition are used as "a catalyst composition for telomerization reaction of a conjugated diene compound with an alcohol." Document 2 describes the production of an unsaturated aliphatic alcohol and ether by means of liquid-phase reaction of an aliphatic conjugated diolefin with water, an aliphatic alcohol or a mixture of both in the presence of a catalyst system of a palladium group of zero (0) valence (column 1, lines 25-32), and also describes that an activator compound used in the form of bonding to a supply source of zero (0) valence palladium is phosphine and an isonitrile substance, that the said isonitrile substance is t-butylisonitrile, cyclohexylisonitrile, etc., and that using a bonded form of an organic or inorganic base material and a system of zero (0) valence palladium activator can significantly enhance the performance of the catalyst system (column 4, line 39 to column 6, line 13). Document 2 (Example 9) describes that a catalyst system constituted of tetrakis(triphenylphosphine)palladium and cyclohexylisonitrile at a molar ratio of 1:1 was used. Document 2, however, does not further suggest that a compound represented by the general formula (I) described in claim 1 is selected as an isocyanide, and is used in combination with a palladium compound and a base represented by the general formula (II) as a catalyst for telomerization reaction of a conjugated diene compound with an alcohol. Furthermore, none of the other documents cited in the ISR describes or suggests that the composition described in claim 1 are used as "a catalyst composition for telomerization reaction of a conjugated diene compound with an alcohol." Nevertheless, there is a doubt as to whether part of the invention of the present application is adequately supported by the specification (concerning catalyst effect), as described in VIII.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP04/000401

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

1. The subject matter of claim 1 does not specify palladium compounds, so it encompasses palladium compounds containing phosphorus as in comparison Example 3. However, in view of the descriptions in Example 3, and page 4, lines 16-24, its effect as a catalyst for telomerization reaction of a conjugated diene compound with an alcohol is not adequately supported if a palladium compound containing phosphorus is used. This is the same for claims 2-22, which cite claim 1.
2. The subject matter of claim 1 does not specify the ratio of an isocyanide to a palladium compound, and so it includes comparison Example 4. However, in view of the descriptions in comparison Example 4, its effect as a catalyst for telomerization reaction of a conjugated diene compound with an alcohol is not adequately supported in case of the composition of the example. This is the same for claims 2, 3, 6-16 and 19-22, which cite claim 1.